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ABSTRACT

This document, which is intended for use by community and junior colleges throughout Mississippi, contains curriculum frameworks for the course sequences in the ophthalmic technology program. Presented in the introductory section are a description of the program and suggested course sequence. Section I lists baseline competencies, and section II consists of outlines for each of the following courses in the sequence: ophthalmic optics I; optics laboratory techniques (OLT) I; laboratory management and inventory control (LMIC) I; ophthalmic optics II; OLT II; LMIC II; ophthalmic dispensing I-II; optical theory and instrumentation; dispensing clinic I; ophthalmic dispensing II; dispensing clinic II; externship; related vocational-technical courses--related studies, fundamentals of microcomputer applications; entrepreneurship; and related academic courses--principles of accounting I, accounting practice case, college algebra, general psychology I, English composition I-II, oral communications, and introduction to computer concepts. Each course outline contains some/all of the following: course name and abbreviation; course classification; course description; prerequisites; and competencies and suggested objectives. Recommended tools and equipment are listed in section III. Appended are lists of related academic topics and workplace skills for the 21st century and student competency profiles for both courses. (KC)

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Mississippi Curriculum Framework for Ophthalmic Technology

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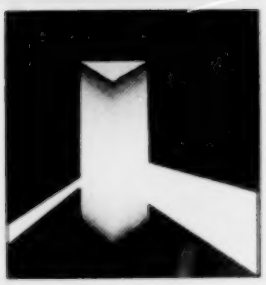

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Postsecondary Vocational and Technical Education
1996

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July 30, 1996

MISSISSIPPI

CURRICULUM FRAMEWORK

FOR

OPHTHALMIC TECHNOLOGY

(Program CIP: 51.1801 - Opticianry/Dispensing Optician)

POSTSECONDARY PROGRAMS 1996

July 30, 1996

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FOREWORD

In order to survive in today's global economy, businesses and industries have had to adopt new practices and procedures. Total quality management, statistical process control, participatory management, and other concepts of high performance work organizations are practices by which successful companies survive. Employers now expect their employees to be able to read, write, and communicate effectively; solve problems and make decisions; and interact with the technologies that are prevalent in today's workplace. Vocational-technical education programs must also adopt these practices in order to provide graduates who can enter and advance in the changing work world.

The curriculum framework in this document reflects these changes in the workplace and a number of other factors that impact on local vocational-technical programs. Federal and state legislation calls for articulation between high school and community college programs, integration of academic and vocational skills, and the development of sequential courses of study that provide students with the optimum educational path for achieving successful employment. National skills standards, developed by industry groups and sponsored by the U. S. Departments of Education and Labor, provide vocational educators with the expectations of employers across the United States. All of these factors are reflected in the framework found in this document.

Each postsecondary program of instruction consists of a program description and a suggested sequence of courses which focus on the development of occupational competencies. Each vocational-technical course in this sequence has been written using a common format which includes the following components:

- Course Name - A common name that will be used by all community/junior colleges in reporting students.
- Course Abbreviation - A common abbreviation that will be used by all community/junior colleges in reporting students.
- Classification - Courses may be classified as:
  - Vocational-technical core - A required vocational-technical course for all students.
  - Vocational-technical elective - An elective vocational-technical course.
  - Related academic course - An academic course which provides academic skills and knowledge directly related to the program area.
  - Academic core - An academic course which is required as part of the requirements for an Associate degree.
- Description - A short narrative which includes the major purpose(s) of the course and the recommended number of hours of lecture and laboratory activities to be conducted each week during a regular semester.

- Prerequisites - A listing of any prerequisite courses that must be taken prior to or on enrollment in the course.
- Competencies and Suggested Objectives - A listing of the competencies (major concepts and performances) and of the suggested student objectives that will enable students to demonstrate mastery of these competencies.

The following guidelines were used in developing the program(s) in this document and should be considered in compiling and revising course syllabi and daily lesson plans at the local level:

- The content of the courses in this document reflects approximately 75 percent of the time allocated to each course. For example, in a four semester hour course consisting of 30 hours lecture and 120 hours of laboratory activities, approximately 22 hours of lecture and 90 hours of lab should be taken by the competencies and suggested objectives identified in the course framework. The remaining 25 percent of each course should be developed at the local district level and may reflect:
  - Additional competencies and objectives within the course related to topics not found in the State framework, including activities related to specific needs of industries in the community college district.
  - Activities which develop a higher level of mastery on the existing competencies and suggested objectives.
  - Activities and instruction related to new technologies and concepts that were not prevalent at the time the current framework was developed/revised.
  - Activities which implement components of the Mississippi Tech Prep initiative, including integration of academic and vocational-technical skills and coursework, school-to-career transition activities, and articulation of secondary and postsecondary vocational-technical programs.
  - Individualized learning activities, including worksite learning activities, to better prepare individuals in the courses for their chosen occupational area.

- Sequencing of the course within a program is left to the discretion of the local district. Naturally, foundation courses related to topics such as safety, tool and equipment usage, and other fundamental skills should be taught first. Other courses related to specific skill areas and related academics, however, may be sequenced to take advantage of seasonal and climatic conditions, resources located outside of the school, and other factors.

- Programs that offer an Associate of Applied Science degree must include a minimum 15 semester credit hour academic core. Specific courses to be taken within this core are to be determined by the local district. Minimum academic core courses are as follows:

- 3 semester credit hours — Math/Science Elective
- 3 semester credit hours — Written Communications Elective
- 3 semester credit hours — Oral Communications Elective
- 3 semester credit hours — Humanities/Fine Arts Elective
- 3 semester credit hours — Social/Behavioral Science Elective

It is recommended that courses in the academic core be spaced out over the entire length of the program, so that students complete some academic and vocational-technical courses each semester. Each community/junior college has the discretion to select the actual courses that are required to meet this academic core requirement.

- In instances where secondary programs are directly related to community and junior college programs, competencies and suggested objectives from the high school programs are listed as Baseline Competencies. These competencies and objectives reflect skills and knowledge that are directly related to the community and junior college vocational-technical program. In adopting the curriculum framework, each community and junior college is asked to give assurances that:
  - students who can demonstrate mastery of the Baseline Competencies do not receive duplicate instruction, and
  - students who cannot demonstrate mastery of this content will be given the opportunity to do so.

- The roles of the Baseline Competencies are to:
  - Assist community/junior college personnel in developing articulation agreements with high schools, and
  - Ensure that all community and junior college courses provide a higher level of instruction than their secondary counterparts

- The Baseline Competencies may be taught as special "Introduction" courses for 3-6 semester hours of institutional credit which will not count toward Associate degree requirements. Community and junior colleges may choose to integrate the Baseline Competencies into ongoing courses in lieu of offering the "Introduction" courses or may offer the competencies through special projects or individualized instruction methods.

- Technical elective courses have been included to allow community colleges and students to customize programs to meet the needs of industries and employers in their area.

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July 30, 1996

OPHTHALMIC TECHNOLOGY

PROGRAM DESCRIPTION

Ophthalmic Technology is a two-year technical program. Upon successful completion of the program, the student is awarded the Associate of Applied Science Degree. The curriculum requires a minimum of 69 semester hours of courses. The minimum requirements are 47 semester hours of vocational-technical courses in ophthalmic technology and 19 hours of academic courses.

Opticianry is defined as "the art and science of optics as applied to compounding, filling, and adapting of ophthalmic prescriptions, products and accessories." Opticianry describes the preparation (making) of ophthalmic lenses, setting them into spectacle frames, and dispensing (fitting and delivering) them to the wearer. These acts include a large number of activities or trades, ranging from the mechanical act of lens grinding to the personal service of the selection, fitting, and adjusting of a pair of glasses to an individual's face, selling, and public relations.

Potential positions may be found in doctor's offices, retail optical stores, wholesale optical laboratories, and optical manufacturing companies. The majority of positions are found in larger city areas with a fewer number being found in small communities.

OPHTHALMIC TECHNOLOGY

SUGGESTED COURSE SEQUENCE*

Baseline Competencies for Ophthalmic Technology**

FIRST YEAR

3 sch	Ophthalmic Optics I (OPT 1113)	3 sch	Ophthalmic Optics II (OPT 1123)
4 sch	Optics Laboratory Techniques I (OPT 1214)	4 sch	Optics Laboratory Techniques II (OPT 1224)
3 sch	Laboratory Management and Inventory Control I (OPT 1313)	3 sch	Laboratory Management and Inventory Control II (OPT 1323)
3 sch	Written Communication Elective	3 sch	Ophthalmic Dispensing I OPT 1413)
3 sch	Related Studies (TRS 1003)	3 sch	Math/Natural Science Elective
16 sch		16 sch	

SECOND YEAR

3 sch	Ophthalmic Dispensing II (OPT 2423)	3 sch	Ophthalmic Dispensing III (OPT 2433)
3 sch	Optical Theory and Instrumentation (OPT 2513)	3 sch	Dispensing Clinic II (OPT 2623)
3 sch	Dispensing Clinic I (OPT 2613)	3 sch	Fundamentals of Microcomputer Technology (CPT 1113) or Introduction to Computers (CSC 1113)
3 sch	Humanities/Fine Arts Elective	3 sch	Oral Communication Elective
3 sch	Principles of Accounting I (ACC 1213)	3 sch	General Psychology I (PSY 1513)
1 sch	Accounting Practice Case (ACC 1211)	3 sch	Entrepreneurship (MMT 2513) (Local district option)
16 sch		15-18 sch	

SUMMER SEMESTER

6 sch Externship (OPT 2916)

* Students who lack entry level skills in math, English, science, etc. will be provided related studies.

** Baseline competencies are taken from the high school Allied Health program. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

SECTION I:

BASELINE COMPETENCIES

BASELINE COMPETENCIES FOR OPHTHALMIC TECHNOLOGY

The following competencies and suggested objectives are taken from the publication *Mississippi Curriculum Framework for Allied Health*. These competencies and objectives represent the baseline which was used to develop the community/junior college Ophthalmic Technology courses. Students enrolled in postsecondary courses should either (1) have documented mastery of these competencies, or (2) be provided with these competencies before studying the advanced competencies in the Ophthalmic Technology program.

Baseline competencies may be integrated into existing courses in the curriculum or taught as special "Introduction" courses. The "Introduction" courses may be taught for up to six semester hours of institutional credit and may be divided into two courses. If the Baseline Competencies are to be taught as "Introduction" courses, each course should be at least 3 credit hours. The following course number(s) and description should be used:

Course Name(s): Introduction to Ophthalmic Technology, Introduction to Ophthalmic Technology I, or Introduction to Ophthalmic Technology II

Course Abbreviation(s): OPT 100(3-6), OPT 1013, OPT 1023

Classification: Vocational-Technical Core

Description: These courses contain the baseline competencies and suggested objectives from the high school curriculum which directly relate to the community college program. The courses are designed for students entering the community college who have had no previous training or documented experience in the field. (3-6 semester hours based upon existing skills for each student. May be divided into 2 courses for a maximum total of 6 hours of institutional credit.)

Competencies and Suggested Objectives:

1. Review material related to course and professional organizations.
   a. Identify student and course expectations.
   b. Identify allied health professional student organizations.
   Related Academic Topics (See Appendix A): C1, C6
   Workplace Skills (See Appendix B): WP2
2. Apply communications in health care.
   a. Identify the three main factors required for the communication process.
   b. Utilize effective communication skills.
   Related Academic Topics (See Appendix A): C1, C6
   Workplace Skills (See Appendix B): WP2, WP3

3. Develop individual career awareness in the health care industry.
   a. Describe careers in the therapeutic area.

   Related Academic Topics (See Appendix A): C1, C6
   Workplace Skills (See Appendix B): WP2
4. Explain professional ethics and legal responsibility.
   a. Explain professional ethics and legal responsibility including negligence, malpractice, and health occupation code of conduct.
   b. Define confidentiality.
   c. Identify and explain the rules of ethics.

   Related Academic Topics (See Appendix A): C1, C4, C6
   Workplace Skills (See Appendix B): WP2, WP3
5. Utilize universal precautions.
   a. Explain importance of universal precautions in life practices and health care.
   b. Explain the state and federal government's role in universal precautions.
   c. Relate universal precautions to the transmission of infectious diseases including HIV, AIDS, HBV, and TB.
   d. Demonstrate hand-washing technique.

   Related Academic Topics (See Appendix A): C1, C4, C6, S8
   Workplace Skills (See Appendix B): WP2
6. Recognize safety procedures and policies.
   a. Describe basic safety procedures.
   b. Describe accident prevention methods and disaster plans.
   c. Follow facility policies.

   Related Academic Topics (See Appendix A): C1, C4, C6, S8
   Workplace Skills (See Appendix B): WP2
7. Perform basic safety procedures.
   a. Assist with basic emergency procedures to include falls, seizures, and fainting.
   b. Attain Class C certification in cardiopulmonary resuscitation.
   c. Demonstrate procedures of first aid for sudden illness and accidents.

   Related Academic Topics (See Appendix A): C1, C4, C6, S8
   Workplace Skills (See Appendix B): WP2, WP6
8. Recognize and use medical terminology.
   a. Demonstrate the use of medical references to spell medical terms correctly.
   b. Define and divide medical terms into root words, prefixes, and suffixes.
   c. Interpret the common medical abbreviations and symbols including meanings, and uses.
   d. Demonstrate the use of medical terms and abbreviations in reading, speaking, interpreting, and writing simulated medical records.

   Related Academic Topics (See Appendix A): C1, C4, C5, C6, S1, S8
   Workplace Skills (See Appendix B): WP2, WP4

9. Recognize the structure and functions of each organ system and apply related basic skills.
   a. Interpret the basic structures and functions of the sensory system.

   Related Academic Topics (See Appendix A): C1, C2, C5, C6, S1
   Workplace Skills (See Appendix B): WP2, WP3, WP4
10. Assess the therapeutic careers by utilizing medical terminology and basic skills in exploring specific therapeutic careers.
   a. Perform vision screening including visual acuity and color blindness according to the policy of the health care facility.
   b. Explain care and correct methods of contact wear according to the policy of the health care facility.
   c. Identify methods necessary for the assistance and safety of the visually impaired client.

   Related Academic Topics (See Appendix A): C1, C4, C6, S1, S8
   Workplace Skills (See Appendix B): WP2, WP3

SECTION II:

CURRICULUM GUIDE

FOR

OPHTHALMIC TECHNOLOGY

OPHTHALMIC TECHNOLOGY COURSES

Course Name: Ophthalmic Optics I

Course Abbreviation: OPT 1113

Classification: Vocational-Technical Core

Description: A study of basic principles of light. Topics covered include visual conditions of the human eye and appropriate lens to correct these conditions. (3 sch: 3 hr. lecture)

Prerequisites: None

Competencies and Suggested Objectives:

1. Discuss principles of light.
   a. Explain wave theory.
   b. Explain light refraction.
   Related Academic Topics (See Appendix A): C1, C2, C4, C6, S6
   Workplace Skills (See Appendix B): WP2, WP6
2. Explain conditions of the human eye.
   a. Define and cite conditions of the human eye.
   Related Academic Topics (See Appendix A): C1, C2, C4, C6, S1
   Workplace Skills (See Appendix B): WP2, WP6
3. Interpret the ophthalmic prescription.
   a. Define the procedure for filling an ophthalmic prescription.
   b. Determine the total lens power as taken from the optical cross.
   c. Determine the appropriate base curve for a given prescription.
   Related Academic Topics (See Appendix A): C1, C2, C4, C6, M1
   Workplace Skills (See Appendix B): WP2, WP6
4. Discuss the lens clock.
   a. Name the parts of a lens clock.
   b. Describe the use of a lens clock.
   Related Academic Topics (See Appendix A): C1, C2, C6
   Workplace Skills (See Appendix B): WP6
5. Differentiate the types of multifocal lenses.
   a. Identify, by sight, five types of multifocal lenses.
   b. Describe the characteristics of five types of multifocal lenses.
   Related Academic Topics (See Appendix A): C1, C2, C6
   Workplace Skills (See Appendix B): WP2, WP6
6. Demonstrate how to determine the addition power of multifocal lenses.
   a. Describe the procedure used to determine the addition power of a lens.
   b. Define and explain the use of the intermediate field.
   Related Academic Topics (See Appendix A): C1, C2, M1
   Workplace Skills (See Appendix B): WP2, WP6

7. Discuss factors affecting lenses.
   a. Assess how different factors affect the outcome of a lens.
   Related Academic Topics (See Appendix A): C1, C2, M1
   Workplace Skills (See Appendix B): WP2, WP6

Course Name: Optics Laboratory Techniques I

Course Abbreviation: OPT 1214

Classification: Vocational-Technical Core

Description: This course will introduce the student to all basic equipment necessary to process the lens through the surface operation. Emphasis will be placed on how to prepare, operate, and maintain equipment. (4 sch: 8 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Produce selected lenses.
   a. Calculate surface layout (glass or plastic) to include:
      (1) Calculate shop slip.
      (2) Mark the lens.
   b. Block the lens to include:
      (1) Precoat lens.
      (2) Select correct lens blocks.
      (3) Block lens using alloy blocker.
   c. Generate the lens to include:
      (1) Set curves on generator.
      (2) Set thickness dial.
      (3) Correct insert lens in lens chuck of generator.
      (4) Turn on machine and generate lens.
      (5) Remove lens from generator and inspect curve and thickness.
   d. Fine-grind the lens (plastic), using two step procedure, to include:
      First fine:
      (1) Select lap and inspect for accuracy.
      (2) Place first fining pad on lap.
      (3) Place lap on lap table of fining machine making sure lap is seated.
      (4) Place lens on machine with axis pins corresponding with axis of lens block.
      (5) Apply pressure.
      (6) Set timer to start machine.
      (7) Upon completion of cycle, remove, clean, and inspect lens.
      Second fine:
      (1) Place second fine pad on lap over first fine pad and repeat steps d3 through d7.
      (2) Remove lap from machine; clean lap for polishing procedure.

e. Polish the lens to include:
   (1) Place polishing pad on lap used for fining.
   (2) Place lap on lap table of machine and tighten.
   (3) Place lens on machine making sure axis pins are in place.
   (4) Set timer to start machine.
   (5) Upon completion of cycle, remove, clean, and inspect.
   (6) Remove lap from machine, clean lap, and replace to proper place.

f. Deblock the lens to include:
   (1) Place lens in deblocker to separate lens from block.
   (2) Remove lens from deblocker.
   (3) Clean and inspect lens.
   (4) Remove block from blocker, clean a block, and replace it in proper storage.

g. Demonstrate equipment maintenance.

Related Academic Topics (See Appendix A): C1, C2, C5, C6, M3, M4, M5, S8
Workplace Skills (See Appendix B): WP2, WP6

Course Name: Laboratory Management and Inventory Control I

Course Abbreviation: OPT 1313

Classification: Vocational-Technical Core

Description: This course will serve as an introduction to supplies and materials used in the ophthalmic laboratories. Laboratory safety procedures and first aid techniques will be included. Laboratory inventory and management skills will be demonstrated using computer software. (3 sch: 2 hr. lecture, 2 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Discuss laboratory management.
   a. Identify supplies and materials used in the ophthalmic laboratory.
   b. Describe inventory procedures for frames and lenses.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, C6, M1
   Workplace Skills (See Appendix B): WP2, WP6
2. Explain laboratory safety as related to ophthalmic technology.
   a. List the hazard areas of the laboratory.
   b. Develop safety procedures to meet a described laboratory layout.
   Related Academic Topics (See Appendix A): C1, C2, C3, M7
   Workplace Skills (See Appendix B): WP2, WP6
3. Describe and use inventory and laboratory management software.
   a. Describe computerized management control for laboratory and inventory.
   b. Demonstrate practical use of management control software.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, S8
   Workplace Skills (See Appendix B): WP2, WP3, WP6
4. Perform basic safety procedures.
   a. Assist with basic emergency procedures to include falls, seizures, and fainting.
   b. Demonstrate procedures of first aid for sudden illness and accident.
   Related Academic Topics (See Appendix A): C1, C2, C3, C6, M1, S8
   Workplace Skills (See Appendix B): WP2, WP3, WP6

Course Name: Ophthalmic Optics II

Course Abbreviation: OPT 1123

Classification: Vocational-Technical Core

Description: A continuation of Ophthalmic Optics I. Topics include the theory of optical instruments, positive and negative cylinders, prisms, and vertex distance. (3 sch: 3 hr. lecture)

Pre/corequisites: Ophthalmic Optics I (OPT 1113)

Competencies and Suggested Objectives:

1. Discuss the lensometer.
   a. Name the major parts of a lensometer and give its use.
   Related Academic Topics (See Appendix A): C1, C2, C5
   Workplace Skills (See Appendix B): WP2, WP6
2. Explain how positive and negative cylinders affect an ophthalmic lens.
   a. Define positive and negative cylinders.
   b. Explain how positive and negative cylinders affect an ophthalmic lens.
   Related Academic Topics (See Appendix A): C1, C2, C6, M1, S8
   Workplace Skills (See Appendix B): WP2, WP6
3. Explain optical principles related to decentration.
   a. Explain the purpose of decentering the lens.
   b. Give the procedure used to determine where the optical center of a lens would be placed.
   c. Define the effect a prism has on a ray of light.
   d. Determine the location of the major reference point.
   e. Determine how to locate the pupillary distance for near and far vision.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, C6, M1, M3, M5, S6, S8
   Workplace Skills (See Appendix B): WP2, WP6
4. Determine the effects of the lens as it is positioned before the eye.
   a. Calculate the effective power of the lens due to shift in vertex distance.
   b. Determine the amount of compensation due to the shift in vertex distance.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, M3, S8
   Workplace Skills (See Appendix B): WP2, WP6

Course Name: Optics Laboratory Techniques II

Course Abbreviation: OPT 1224

Classification: Vocational-Technical Core

Description: Continuation of Optics Laboratory Techniques I. Emphasis will be placed on lens inspection, cutting and edging, heat treatment, lens insertion, inspection, and tinting. (4 sch: 8 hr. lab)

Pre/corequisites: Ophthalmic Optics II (OPT 1123), Laboratory Management and Inventory Control II (OPT 1323), Ophthalmic Dispensing I (OPT 1413), Optics Laboratory Techniques I (OPT 1214)

Competencies and Suggested Objectives:

1. Develop finish laboratory skills.
   a. Inspect the lens to include:
      (1) Check lens for imperfections.
      (2) Place lens in lens holder of lensometer.
      (3) Set axis wheel of lensometer.
      (4) Check lens for power by moving power wheel of lensometer according to Rx.
      (5) Spot lens using lens marker on lensometer.
   b. Lay out for edging to include:
      (1) Check frame size.
      (2) Calculate decentration.
      (3) Calculate segment drop.
      (4) Set layout marker to correct decentration.
      (5) Set layout marker to correct seg. drop.
      (6) Place lens in layout marker making sure lens is lined up correctly.
      (7) Mark and remove lens.
   c. Edge block to include:
      (1) Select correct edging block.
      (2) Place edge blocking pad on front of lens.
      (3) Place block in blocker.
      (4) Align lens making sure axis line of lens is aligned with axis line of blocker.
      (5) Block lens.
   d. Edge the lens to include:
      (1) Select correct frame pattern.
      (2) Place pattern on edger.
      (3) Set edger to correct size.
      (4) Set bevel location.

(5) Place lens in edger.
(6) Edge lens and check against frame for correct size.
(7) Using hand edger, remove flakes from bevel of lens.

e. Heat treat the glass lens to include:
(1) Heat treatment unit should be preheated according to manufacturer's instructions.
(2) Check lens thickness for time of heat treatment.
(3) Clean lens.
(4) Place in heat treatment unit elevator.
(5) Set timer to start cycle.
(6) After cycle has completed, remove lens from machine.
(7) Check lens for maltese cross using polariscope.
(8) Drop ball test lens for strength.

f. Insert lens in plastic frame to include:
(1) Heat frame using warmer.
(2) Insert lens.
(3) Straighten and align frame.

g. Insert lens in metal frame to include:
(1) Remove eyewire screws.
(2) Place lens in bevel of frame.
(3) Replace screws.
(4) Straighten and align frame.

h. Complete final inspection to include:
(1) Check frame alignment.
(2) Check pupillary distance.
(3) Check seg. height.
(4) Check lens axis.
(5) Check lens power.
(6) Check overall appearance of glasses.

i. Tint plastic lens to include:
(1) Preheat dye unit.
(2) Clean lens.
(3) Dip in lens preparation.
(4) Place lens in proper dye depending on color and tint desired.
(5) Remove lens from dye and wash with clean water.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M2, M3, M5, S8

Workplace Skills (See Appendix B): WP2, WP6

Course Name: Laboratory Management and Inventory Control II

Course Abbreviation: OPT 1323

Classification: Vocational-Technical Core

Description: Continuation of Laboratory Management and Inventory Control I. Emphasis of this course will be on small business management concepts as related to an optical business. (3 sch: 3 hr. lecture)

Prerequisites: Laboratory Management and Inventory Control I (OPT 1313)

Competencies and Suggested Objectives:

1. Apply small business management concepts to an optical business.
   a. Identify the advantages of various optical professions.
   b. Develop a personnel procedure for employees working in a particular environment.
   c. Compare similar facilities in terms of operation and employee benefits.
   d. Develop plans for a complete wholesale optical business and give start-up cost. Plans must include:
      (1) Complete inventory for in-house use as well as resale:
         A. lenses
         B. frames
         C. supplies
      (2) Cost of equipment.
      (3) Projected payroll (total salaries for one month).
      (4) Projected other costs (building, utilities, insurance).

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1
   Workplace Skills (See Appendix B): WP1, WP2, WP6

Course Name: Ophthalmic Dispensing I

Course Abbreviation: OPT 1413

Classification: Vocational-Technical Core

Description: This course is a foundation course that will serve as a lecture introduction to ophthalmic dispensing and related areas. Topics include frame parts, selection, lens positioning and insertion, frame fitting, and progressive lenses. (3 sch: 3 hr. lecture)

Prerequisites: None

Competencies and Suggested Objectives:

1. Name the basic frame parts used in eyewear.
   a. Label the basic frame parts used in eyewear.
   Related Academic Topics (See Appendix A): C1, C2
   Workplace Skills (See Appendix B): WP2, WP6
2. Develop skills in frame selection.
   a. Explain the frame dimensional properties.
   b. Describe the accurate methodology for measuring the interpupillary distance and explain its relationship with the eyeglass lens.
   c. Describe frame selection based on facial anatomy.
   Related Academic Topics (See Appendix A): C1, C2, C6, M1, S1, S8
   Workplace Skills (See Appendix B): WP2, WP6
3. Explain lens positioning in the frame.
   a. Explain lens positioning including:
      (1) optical center placement.
      (2) multifocal height.
      (3) lens blank size determination.
   Related Academic Topics (See Appendix A): C1, C2, C6, M1, S8
   Workplace Skills (See Appendix B): WP2, WP6
4. Explain the techniques of inserting the lens in the frame to achieve a neat professional appearance.
   a. Describe methods of lens insertion.
   b. Explain standard alignment and frame fitting.
   Related Academic Topics (See Appendix A): C1, C2, C6, M4
   Workplace Skills (See Appendix B): WP2, WP6
5. Summarize the art of fitting the frame to a client.
   a. Summarize the art of fitting the frame properly to include:
      (1) plastic frames.
      (2) metal frames.
      (3) rimless mounting.

(4) half eye frames.
(5) nylon supra frames.

Related Academic Topics (See Appendix A): C1, C3, C4, C5, C6
Workplace Skills (See Appendix B): WP2, WP3, WP6

6. Explain the lens design and proper fitting techniques of a progressive lens.
   a. Discuss lens design of a progressive lens.
   b. Describe fitting techniques of a progressive lens.

Related Academic Topics (See Appendix A): C1, C3, C4, C5, C6
Workplace Skills (See Appendix B): WP2, WP3, WP6

Course Name: Ophthalmic Dispensing II

Course Abbreviation: OPT 2423

Classification: Vocational-Technical Core

Description: An introduction to prescription analysis and interpretation. Various types of Rx's will be discussed, as to what types of lens and frames should be considered for the final product. Emphasis will be placed on the effect of the Rx as related to the patient's needs and wants. Tints, thickness factor, cosmetic considerations, and the overall utility of the final product will be discussed. Business communication skills will also be introduced. (3 sch: 3 hr. lecture)

Pre/corequisites: Ophthalmic Dispensing I (OPT 1413)

Competencies and Suggested Objectives:

1. List lens and frame types that satisfy the prescription requirements.
   a. Identify frame types used with positive lenses.
   b. Identify frame types used with negative lenses.
   Related Academic Topics (See Appendix A): C1,C2, C3, C4, C5, C6
   Workplace Skills (See Appendix B): WP2, WP6
2. Discuss lens tints as related to the client's needs and Rx requirements.
   a. Interpret the transmission chart of a particular lens tint.
   b. Describe the effects of tints as related to the patient's needs and Rx requirements.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1
   Workplace Skills (See Appendix B): WP2, WP6
3. Summarize client information.
   a. Determine information relative to the final Rx such as:
      (1) Decentration.
      (2) Inset.
      (3) Minimum blank size.
      (4) Base curve selection.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M2, M3, M4, S8
   Workplace Skills (See Appendix B): WP2, WP6
4. Explain business communication skills.
   a. List aspects of communication including communication between the dispenser and a client.
   b. Recognize the importance of visual communication to include:
      (1) Store appearance.
      (2) Staff conduct and appearance.
      (3) Sales aids.

c. Demonstrate verbal communication to include:
   (1) How to talk to the customer.
   (2) Telephone usage to include introductions and general telephone etiquette.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6
Workplace Skills (See Appendix B): WP2, WP6

Course Name: Optical Theory and Instrumentation

Course Abbreviation: OPT 2513

Classification: Vocational-Technical Core

Description: An in-depth look into the basic theoretical principles of optical theory, as related to lenses, fitting problems, and instrumentation. Such topics as reflection, refraction, magnification, and object-location will be discussed. (3 sch: 3 hr. clinical)

Prerequisite: None

Competencies and Suggested Objectives:

1. Describe the action of a light ray as it passes through an optical surface.
   a. Describe the action of a single ray of light and how it is affected when passing through a transparent optical surface.
   b. Describe the action of a curved surface on more than one ray of light.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M2, M3, M5, S6
   Workplace Skills (See Appendix B): WP2, WP6
2. Discuss lens design.
   a. Explain how lenses can be made in a variety of forms, with many forms possible for a lens of the same power.
   b. Explain the factors that affect lens functions from its original design through its final position in the frame.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M3, S6
   Workplace Skills (See Appendix B): WP2, WP6
3. Discuss prisms.
   a. Define Prentise's rule.
   b. Calculate prism for a given Rx.
   Related Academic Topics (See Appendix A): C1, C2, C5, C6, M1, M5, S6
   Workplace Skills (See Appendix B): WP2, WP6
4. Describe the effects of near addition.
   a. Explain the concept of near addition.
   b. Calculate the near power of a lens.
   Related Academic Topics (See Appendix A): C1, C3, C4, C5, C6, M3
   Workplace Skills (See Appendix B): WP2, WP6
5. Examine vertical prismatic imbalance.
   a. Discuss bi-centric grinding.
   b. Calculate vertical prismatic imbalance.

c. Explain the procedure for bi-centric grinding.
Related Academic Topics (See Appendix A): C1, C3, C4, C5, C6, M3
Workplace Skills (See Appendix B): WP2, WP6

Course Name: Dispensing Clinic I

Course Abbreviation: OPT 2613

Classification: Vocational-Technical Core

Description: An on-campus clinical experience, operated by the Ophthalmic Dispensing students. Practical clinical procedures will be practiced and proficiency demonstrated. (3 sch: 6 hr. lab)

Pre/corequisites: Ophthalmic Dispensing II (OPT 2423), Optical Theory and Instrumentation (OPT 2513)

Competencies and Suggested Objectives:

1. Demonstrate small business procedures.
   a. Set up a procedure for office operations.
   b. Write up Rx orders according to Rx requirements and patient's needs.
   c. Demonstrate inventory control in the clinic.
   d. Prepare order forms.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1
   Workplace Skills (See Appendix B): WP2, WP3, WP6
2. Demonstrate ophthalmic procedures.
   a. Demonstrate frame adjustments to obtain recommended fit.
   b. Complete selected clinic assignments.
   c. Demonstrate communication skills.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6
   Workplace Skills (See Appendix B): WP2, WP3, WP6

Course Name: Ophthalmic Dispensing III

Course Abbreviation: OPT 2433

Classification: Vocational-Technical Core

Description: A continuation of Ophthalmic Dispensing II. Emphasis will be placed on the more advanced and unusual prescription related to ophthalmic dispensing and on sales techniques. Topics to improve the ophthalmic dispenser's relationship with fellow opticians, optometrists, ophthalmologists, wholesalers, manufacturers, and employees will be discussed. (3 sch: 3 hr. lecture)

Pre/corequisites: Ophthalmic Dispensing II (OPT 2423)

Competencies and Suggested Objectives:

1. Compare the optical difference between special and regular lenses.
   a. Describe the different types of invisible lenses and cataract lenses.
   b. List the fitting procedure for cataract lenses and invisible lenses.
   c. Describe the need for occupational safety eyewear.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S8
   Workplace Skills (See Appendix B): WP2, WP6
2. Discuss the special needs client.
   a. Describe the various types of eyewear used for the special needs client and how they are fitted.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6
   Workplace Skills (See Appendix B): WP2, WP6
3. Discuss selling techniques.
   a. Examine business ethics.
   b. Discuss high and low pressure selling techniques.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6
   Workplace Skills (See Appendix B): WP2, WP3, WP6
4. Discuss the relationship between the wholesale supplier and the retailer.
   a. Relate problems of a salesperson.
   b. Analyze the attitude of the buyer.
   c. Discuss supply lab problems on the wholesale level.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6
   Workplace Skills (See Appendix B): WP2, WP3, WP6
5. Discuss the role of the employee.
   a. Explain responsibilities of the employee.
   b. Discuss employee appearance.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6
   Workplace Skills (See Appendix B): WP2, WP3, WP6

Course Name: Dispensing Clinic II

Course Abbreviation: OPT 2623

Classification: Vocational-Technical Core

Description: Continuation of Dispensing Clinic I. Continuous evaluations will be done to study the clinic operation in terms of its efficiency and effectiveness of operations. Additional adjustments and delivery will be done. Emphasis will be placed on developed cases of special Rx's and pediatric dispensing. Advanced projects, such as multifocal lens fitting will be completed. (3 sch: 6 hr. lab)

Pre/corequisites: Ophthalmic Dispensing III (OPT 2433), Dispensing Clinic I (OPT 2613)

Competencies and Suggested Objectives:

1. Determine the best eyewear for the client based on occupation, sports, hobbies, etc.
   a. Identify all FDA rules pertaining to eyeglasses.
   b. Select the appropriate lens for the client.
   c. Select the appropriate frame for the client.
   d. Develop case histories of special and pediatric prescriptions.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S8
   Workplace Skills (See Appendix B): WP2, WP3, WP6
2. Explain multifocal lens fitting techniques.
   a. Determine the pupillary distance and segment location.
   b. Demonstrate fitting progressive lenses.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M4, S8
   Workplace Skills (See Appendix B): WP2, WP3, WP6

Course Name: Externship

Course Abbreviation: OPT 2916

Classification: Vocational-Technical Core

Description: This course will be conducted off-campus at a clinical location. The student will be under the direct supervision of the manager or clinical director. Evaluations will be completed by the instructors and off-campus clinical participants. Should be taken during final summer semester. (6 sch: 18 hr. clinical)

Pre/corequisites: Successful completion of all Ophthalmic Technology courses

Competencies and Suggested Objectives:

1. Demonstrate mastery of selected skills in a clinical setting.
   a. Use of effective oral and written communication.
   b. Perform basic mathematical and algebraic operations.
   c. Demonstrate knowledge of the human eye structure, function, and pathology.
   d. Determine physiognomic measurements.
   e. Neutralize eyewear prescriptions.
   f. Assess vocational and avocational needs of the client.
   g. Assist the client in selection of proper frames and lenses.
   h. Price and collect fees from clients for ophthalmic goods and services.
   i. Prepare ophthalmic laboratory job orders.
   j. Deliver prescription eyewear and instruct client in use and care.
   k. Maintain patient records.
   l. Provide follow-up service to the client, including periodic eyewear adjustment, repair, and lens and frame replacement.
   m. Respond to client complaints.
   n. Apply rules and regulations for safe work practices.
   o. Recognize the function of equipment.
   p. Utilize and maintain equipment.
   q. Demonstrate proficiency in finishing techniques.
   r. Assist in the business related area of ophthalmic dispensing, including record maintenance, frame and lens inventory, supply and equipment maintenance, and third party forms.
   s. Discuss prescription eyewear and other client related information (verbal and written) with the refractionist.

t. Complete one written report over specific job duties performed during externship.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M2, M3, M4, M5, S1, S6, S8

Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6

RELATED VOCATIONAL-TECHNICAL COURSES

Course Name: Related Studies

Course Abbreviation: TRS 1003

Classification: Related Vocational-Technical

Description: This course provides individual instruction for students who are academically deficient in subjects pertaining to their chosen field of study.

Prerequisites: None

Course Name: Fundamentals of Microcomputer Applications

Course Abbreviation: CPT 1113

Classification: Related Vocational-Technical (From Business and Office and Related Technology Cluster)

Description: This course will introduce information processing concepts to include: word processing, spreadsheet, and database management software. **Service course; not to taken by Business and Office and Related Technology students.** (3 sch: 2 hr. lecture, 2 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Discuss hardware components.
   a. Describe the input, output, and storage elements of the information processing cycle and explain each element.
   b. Describe and discuss the three main classifications of the computer to include micro, mid-range, and mainframes.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
2. Explain classes of software.
   a. Describe functions of systems software.
   b. Identify widely used software applications.
   c. Discuss various high level languages.
   d. Discuss data organization.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
3. Create and print mailable documents.
   a. Develop keyboarding skills.
   b. Prepare letters using full block style.
   c. Use word processing software to produce documents.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
4. Create and print spreadsheet.
   a. Use spreadsheet software to produce acceptable worksheets.
   b. Generate graphs from worksheets.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
5. Create and print database files.
   a. Use database software to produce databases.
   b. Edit database records.

c. Print reports.

Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M7, S8
Workplace Skills (See Appendix B): WP2, WP4, WP6

6. Integrate application information.
   a. Merge a database with a word processing letter.
   b. Merge a spreadsheet with a letter.

Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M7, S8
Workplace Skills (See Appendix B): WP2, WP4, WP6

Course Name: Entrepreneurship

Course Abbreviation: MMT 2513

Classification: Related Vocational-Technical (From Marketing Management Technology)

Description: Study of the development of a product or services idea and the creation of an organization to further its growth. (3 sch: 2 hr. lecture, 2 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Develop a comprehensive business plan for creating a potential business.
   a. Identify major advantages and disadvantages associated with going into business independently.
   b. Identify the advantages and disadvantages of franchising a product and franchising an entire business operation.
   c. Describe typical personal characteristics and experiences of entrepreneurs.
   d. Explain financing alternatives for the entrepreneur.
   e. Identify factors involved in determining the location of a proposed business.
   f. Describe the legal forms of organization.
   g. Develop a comprehensive plan for monitoring performance.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M2, M6

   Workplace Skills (See Appendix B): WP1, WP2, WP6

RELATED ACADEMIC COURSES

Course Name: Principles of Accounting I

Course Abbreviation: ACC 1213

Classification: Related Academic

Description: A study of the elementary accounting principles as applied to the various forms of business organizations, and an introduction to specialized fields of accounting.

July 30, 1996

Course Name: Accounting Practice Case

Course Abbreviation: ACC 1211

Classification: Related Academic

Description: Cost accounting principles and techniques as applies to both job order and continuous process types of industry. The determination of unit costs and the preparation of cost reports are emphasized throughout the course.

Course Name: College Algebra

Course Abbreviation: MAT 1313

Classification: Related Academic

Description: This course includes equations, inequalities, functions and graphs, circles, polynomial and rational functions, and systems of equations and inequalities.

Prerequisites: At least two units of high school algebra, or MAT 1233

Course Name: General Psychology I

Course Abbreviation: PSY 1513

Classification: Related Academic

Description: An introduction to the scientific study of human behavior. Includes history and methods of psychology; growth and development; principles of learning; sensation and perception; thinking; statistics; personality; and intelligence.

Prerequisites: At least two units of high school algebra, or MAT 1233

Course Name: English Composition I

Course Abbreviation: ENG 1113

Classification: Related Academic

Description: A study of grammar and composition, with emphasis on the sentence and the paragraph. Readings, frequent themes.

Course Name: English Composition II

Course Abbreviation: ENG 1123

Classification: Related Academic

Description: A continuation of ENG 1113 with emphasis on the whole composition. Readings, themes, and research paper required.

Course Name: Oral Communications (Principles of Speech)

Course Abbreviation: SPT 1113

Classification: Related Academic

Description: Correct and effective English; correct pronunciation and enunciation; breath control; study and practice in making speeches for all occasions, major emphasis on organization of material; and practice in speaking before a group.

July 30, 1996

Course Name: Introduction to Computer Concepts

Course Abbreviation: CSC 1113

Classification: Related Academic

Description: A basic course that advances concepts, terminology, and theory of modern computers. It is a survey course. It is not for business, computer science, or engineering students.

SECTION III:

RECOMMENDED TOOLS AND EQUIPMENT

RECOMMENDED TOOLS AND EQUIPMENT FOR POSTSECONDARY OPHTHALMIC TECHNOLOGY PROGRAMS

CAPITAL EQUIPMENT:

1. Surface Layout Markers (2 per program)
2. Surface Layout Blockers (2 per program)
3. Surface Generator (1 per program)
4. Lens Surfacers (4 spindle) (4 per program)
5. Alloy Reclaim Tanks (2 per program)
6. Lap Racks (2 per program)
7. Air Lens Dryer (1 per program)
8. Lap Cutter (1 per program)
9. Pad Press (1 per program)
10. Surface Saver Tape Dispenser (2 per program)
11. Lap Blanks, assorted (500 per program)
12. Lensometer (10 per program)
13. Lens Analyzers (2 per program)
14. Finish Layout Marker (2 per program)
15. Finish Layout Blocker (4 per program)
16. Patternless Edger, Computerized (1 per program)
17. Bevel Edger (2 per program)
18. Hand Edger (5 per program)
19. 6-Pot Lens Dye Unit (3 per program)
20. Patternmaker (1 per program)
21. Lens Grooving Machine (2 per program)
22. Edge Polisher (2 per program)
23. Display Tables, 52"l x 18"w x 32"h (5 per program)
24. Frame Bar, Rectangular, holds 150 (4 per program)
25. Frame Display, Hex (4 per program)
26. Coramel Reflex Pupilometers (2 per program)
27. Fitting Tables (2 per program)
28. Frames, Glasses, assorted (1,000 pairs per program)
29. Lens Cabinet, holds 1,500 pair (1 per program)
30. Work Bench (12 per program)
31. Computer (1 per 4 students)
32. Printer, Laser (1 per 2 computers)
33. Computer Workstation (1 per computer)

NON-CAPITAL EQUIPMENT:

1. Pattern Racks (2 per program)
2. Frame Warmers (glass beads) (5 per program)

3. Spectrometer (1 per program)
4. Gradient Machine for Dye Units (2 per program)
5. Hand Tools, assorted set (12 sets per program)
6. Lens Holders for Dye Unit (10 per program)
7. Chairs, Patient (2 per program)
8. Stools, Optician (2 per program)
9. Frame Warmers, Hot Air (4 per program)
10. Love Seat (2 per program)
11. Reception Chairs (5 per program)
12. Axis Pliers (4 per program)
13. Lens Calipers (4 per program)
14. Ruler, in millimeter graduations (20 per program)
15. Screwdriver, Optical (20 per program)
16. Toolkits, Student (12 per program)
17. Lap Gauge (1 per program)
18. Saggita Gauge (1 per program)
19. Hand Tools, Mechanics Set (1 set per program)
20. Stools, Laboratory (12 per program)
21. Computer Chair (1 per computer)

INSTRUCTIONAL AIDS

1. Eye Model (1 per program)
2. VCR (1 per program)
3. Monitor, TV, 25" color (1 per program)
4. Overhead Projector (1 per program)
5. Screen, Projector (1 per program)
6. File Cabinets (2 per program)
7. Book Shelves, Library-type (5 per program)
8. Tables (for Reference room) (2 per program)
9. Chairs (for Reference room) (8 per program)
10. Desk, Student (24 per program)
11. Desk, Teacher (1 per program)
12. Chair, Teacher (1 per program)
13. Office Desk and Chair Set (1 set per program)
14. Psychoschematic Charts (Color Blindness) (1 per program)
15. Snellen Charts (visual acuity) (5 per program)

REFERENCES:

The Art and the Science of Opticianry, Volume I
The Art and the Science of Opticianry, Volume II
Systems for Ophthalmic Dispensing
Understanding Lens Surfacing

Essentials of Ophthalmic Lens Work
Glossary of Optical Terms
Optical Management

SOFTWARE:

Optical Software, (containing laboratory management and inventory control) (1 per computer)

VIDEOS:

ABO Approved Training Tapes, Volume I
ABO Approved Training Tapes, Volume II
First Aid

APPENDIX A:

RELATED ACADEMIC TOPICS

APPENDIX A

RELATED ACADEMIC TOPICS FOR COMMUNICATIONS

C1 Interpret written material.
C2 Interpret visual materials (maps, charts, graphs, tables, etc.).
C3 Listen, comprehend, and take appropriate actions.
C4 Access, organize, and evaluate information.
C5 Use written and/or oral language skills to work cooperatively to solve problems, make decisions, take actions, and reach agreement.
C6 Communicate ideas and information effectively using various oral and written forms for a variety of audiences and purposes.

EXPANDED TOPICS FOR COMMUNICATIONS

TOPIC C1: Interpret written material.

C1.01 Read and follow complex written directions.
C1.02 Recognize common words and meanings associated with a variety of occupations.
C1.03 Adjust reading strategy to purpose and type of reading.
C1.04 Use sections of books and reference sources to obtain information.
C1.05 Compare information from multiple sources and check validity.
C1.06 Interpret items and abbreviations used in multiple forms.
C1.07 Interpret short notes, memos, and letters.
C1.08 Comprehend technical words and concepts.
C1.09 Use various reading techniques depending on purpose for reading.
C1.10 Find, read, understand, and use information from printed matter or electronic sources.

TOPIC C2: Interpret visual materials (maps, charts, graphs, tables, etc.).

C2.01 Use visuals in written and in oral presentations.
C2.02 Recognize visual cues to meaning (layout, typography, etc.).
C2.03 Interpret and apply information using visual materials.

TOPIC C3: Listen, comprehend, and take appropriate action.

C3.01 Identify and evaluate orally-presented messages according to purpose.
C3.02 Recognize barriers to effective listening.
C3.03 Recognize how voice inflection changes meaning.
C3.04 Identify speaker signals requiring a response and respond accordingly.
C3.05 Listen attentively and take accurate notes.
C3.06 Use telephone to receive information.

C3.07 Analyze and distinguish information from formal and informal oral presentations.

TOPIC C4: Access, organize, and evaluate information.

C4.01 Distinguish fact from opinion.
C4.02 Use various print and non-print sources for specialized information.
C4.03 Interpret and distinguish between literal and figurative meaning.
C4.04 Interpret written or oral communication in relation to context and writer's point of view.
C4.05 Use relevant sources to gather information for written or oral communication.

TOPIC C5: Use written and/or oral language skills to work cooperatively to solve problems, make decisions, take actions, and reach agreement.

C5.01 Select appropriate words for communication needs.
C5.02 Use reading, writing, listening, and speaking skills to solve problems.
C5.03 Compose inquiries and requests.
C5.04 Write persuasive letters and memos.
C5.05 Edit written reports, letters, memos, and short notes for clarity, correct grammar, and effective sentences.
C5.06 Write logical and understandable statements, phrases, or sentences for filling out forms, for correspondence or reports.
C5.07 Write directions or summaries of processes, mechanisms, events, or concepts.
C5.08 Select and use appropriate formats for presenting reports.
C5.09 Convey information to audiences in writing.
C5.10 Compose technical reports and correspondence that meet accepted standards for written communications.

TOPIC C6: Communicate ideas and information using oral and written forms for a variety of audiences and purposes.

C6.01 Give complex oral instructions.
C6.02 Describe a business or industrial process/mechanism.
C6.03 Participate effectively in group discussions and decision making.
C6.04 Produce effective oral messages utilizing different media.
C6.05 Explore ideas orally with partners.
C6.06 Participate in conversations by volunteering information when appropriate and asking relevant questions when appropriate.
C6.07 Restate or paraphrase a conversation to confirm one's own understanding.
C6.08 Gather and provide information utilizing different media.

C6.09 Prepare and deliver persuasive, descriptive, and demonstrative oral presentations.

RELATED ACADEMIC TOPICS FOR MATHEMATICS

M1 Relate number relationships, number systems, and number theory.
M2 Explore patterns and functions.
M3 Explore algebraic concepts and processes.
M4 Explore the concepts of measurement.
M5 Explore the geometry of one-, two-, and three-dimensions.
M6 Explore concepts of statistics and probability in real world situations.
M7 Apply mathematical methods, concepts, and properties to solve a variety of real-world problems.

EXPANDED TOPICS FOR MATHEMATICS

TOPIC M1: Relate number relationships, number systems, and number theory.

M1.01 Understand, represent, and use numbers in a variety of equivalent forms (integer, fraction, decimal, percent, exponential, and scientific notation) in real world and mathematical problem situations.
M1.02 Develop number sense for whole numbers, fractions, decimals, integers, and rational numbers.
M1.03 Understand and apply ratios, proportions, and percents in a wide variety of situations.
M1.04 Investigate relationships among fractions, decimals, and percents.
M1.05 Compute with whole numbers, fractions, decimals, integers, and rational numbers.
M1.06 Develop, analyze, and explain procedures for computation and techniques for estimations.
M1.07 Select and use an appropriate method for computing from among mental arithmetic, paper-and-pencil, calculator, and computer methods.
M1.08 Use computation, estimation, and proportions to solve problems.
M1.09 Use estimation to check the reasonableness of results.

TOPIC M2: Explore patterns and functions.

M2.01 Describe, extend, analyze, and create a wide variety of patterns.
M2.02 Describe and represent relationships with tables, graphs, and rules.
M2.03 Analyze functional relationships to explain how a change in one quantity results in a change in another.
M2.04 Use patterns and functions to represent and solve problems.
M2.05 Explore problems and describe results using graphical, numerical, physical, algebraic, and verbal mathematical models or representations.

M2.06 Use a mathematical idea to further their understanding of other mathematical ideas.
M2.07 Apply mathematical thinking and modeling to solve problems that arise in other disciplines, such as art, music, and business.

TOPIC M3: Explore algebraic concepts and processes.

M3.01 Represent situations and explore the interrelationships of number patterns with tables, graphs, verbal rules, and equations.
M3.02 Analyze tables and graphs to identify properties and relationships and to interpret expressions and equations.
M3.03 Apply algebraic methods to solve a variety of real world and mathematical problems.

TOPIC M4: Explore the concepts of measurement.

M4.01 Estimate, make, and use measurements to describe and compare phenomena.
M4.02 Select appropriate units and tools to measure to the degree of accuracy required in a particular situation.
M4.03 Extend understanding of the concepts of perimeter, area, volume, angle measure, capacity, and weight and mass.
M4.04 Understand and apply reasoning processes, with special attention to spatial reasoning and reasoning with proportions and graphs.

TOPIC M5: Explore the geometry of one-, two-, and three-dimensions.

M5.01 Identify, describe, compare, and classify geometric figures.
M5.02 Visualize and represent geometric figures with special attention to developing spatial sense.
M5.03 Explore transformations of geometric figures.
M5.04 Understand and apply geometric properties and relationships.
M5.05 Classify figures in terms of congruence and similarity and apply these relationships.

TOPIC M6: Explore the concepts of statistics and probability in real world situations.

M6.01 Systematically collect, organize, and describe data.
M6.02 Construct, read, and interpret tables, charts, and graphs.
M6.03 Develop an appreciation for statistical methods as powerful means for decision making.
M6.04 Make predictions that are based on exponential or theoretical probabilities.

M6.05 Develop an appreciation for the pervasive use of probability in the real world.

TOPIC M7: Apply mathematical methods, concepts, and properties to solve a variety of real-world problems.

M7.01 Use computers and/or calculators to process information for all mathematical situations.
M7.02 Use problem-solving approaches to investigate and understand mathematical content.
M7.03 Formulate problems from situations within and outside mathematics.
M7.04 Generalize solutions and strategies to new problem situations.

RELATED ACADEMIC TOPICS FOR SCIENCE

S1 Explain the Anatomy and Physiology of the human body.
S2 Apply the basic biological principles of Plants, Viruses and Monerans, Algae, Protista, and Fungi.
S3 Relate the nine major phyla of the kingdom animalia according to morphology, anatomy, and physiology.
S4 Explore the chemical and physical properties of the earth to include Geology, Meteorology, Oceanography, and the Hydrologic Cycle.
S5 Investigate the properties and reactions of matter to include symbols, formulas and nomenclature, chemical equations, gas laws, chemical bonding, acid-base reactions, equilibrium, oxidation-reduction, nuclear chemistry, and organic chemistry.
S6 Explore the principles and theories related to motion, mechanics, electricity, magnetism, light energy, thermal energy, wave energy, and nuclear physics.
S7 Explore the principles of genetic and molecular Biology to include the relationship between traits and patterns of inheritance, population genetics, the structure and function of DNA, and current applications of DNA technology.
S8 Apply concepts related to the scientific process and method to include safety procedures for classroom and laboratory; use and care of scientific equipment; interrelationships between science, technology and society; and effective communication of scientific results in oral, written, and graphic form.

EXPANDED TOPICS FOR SCIENCE

TOPIC S1: Explain the Anatomy and Physiology of the human body.

S1.01 Recognize common terminology and meanings.
S1.02 Explore the relationship of the cell to more complex systems within the body.

S1.03 Summarize the functional anatomy of all the major body systems.
S1.04 Relate the physiology of the major body systems to its corresponding anatomy.
S1.05 Compare and contrast disease transmission and treatment within each organ system.
S1.06 Explore the usage of medical technology as related to human organs and organ systems.
S1.07 Explain the chemical composition of body tissue.

TOPIC S2: Apply the basic biological principles of Plants, Viruses and Monerans, Algae, Protista, and Fungi.

S2.01 Identify the major types and structures of plants, viruses, monera, algae protista, and fungi.
S2.02 Explain sexual and asexual reproduction.
S2.03 Describe the ecological importance of plants as related to the environment.
S2.04 Analyze the physical chemical and behavioral process of a plant.

TOPIC S3: Relate the nine major phyla of the kingdom animalia according to morphology, anatomy, and physiology.

S3.01 Explain the morphology, anatomy, and physiology of animals.
S3.02 Describe the characteristics, behaviors, and habitats of selected animals.

TOPIC S4: Explore the chemical and physical properties of the earth to include Geology, Meteorology, Oceanography, and the Hydrologic Cycle.

S4.01 Examine minerals and their identification, products of the rock cycle, byproducts of weathering, and the effects of erosion.
S4.02 Relate the Hydrologic Cycle to include groundwater its zones, movement, and composition; surface water systems, deposits, and runoff.
S4.03 Consider the effects of weather and climate on the environment.
S4.04 Examine the composition of seawater; wave, tides, and currents; organisms, environment, and production of food; energy, food and mineral resources of the oceans.

TOPIC S5: Investigate the properties and reactions of matter to include symbols, formulas and nomenclature, chemical equations, gas laws, chemical bonding, acid-base reactions, equilibrium, oxidation-reduction, nuclear chemistry, and organic chemistry.

S5.01 Examine the science of chemistry to include the nature of matter, symbols, formulas and nomenclature, and chemical equations.

S5.02 Identify chemical reactions including precipitation, acids-bases, and reduction-oxidation.
S5.03 Explore the fundamentals of chemical bonding and principles of equilibrium.
S5.04 Relate the behavior of gases.
S5.05 Investigate the structure, reactions, and uses of organic compounds; and investigate nuclear chemistry and radiochemistry.

TOPIC S6: Explore the principles and theories related to motion, mechanics, electricity, magnetism, light energy, thermal energy, wave energy, and nuclear physics.

S6.01 Examine fundamentals of motion of physical bodies and physical dynamics.
S6.02 Explore the concepts and relationships among work, power, and energy.
S6.03 Explore principles, characteristics, and properties of electricity, magnetism, light energy, thermal energy, and wave energy.
S6.04 Identify principles of modern physics related to nuclear physics.

TOPIC S7: Explore the principles of genetic and molecular Biology to include the relationship between traits and patterns of inheritance; population genetics, the structure and function of DNA, and current applications of DNA technology.

S7.01 Examine principles, techniques, and patterns of traits and inheritance in organisms.
S7.02 Apply the concept of population genetics to both microbial and multicellular organism.
S7.03 Identify the structure and function of DNA and the uses of DNA technology in science, industry, and society.

TOPIC S8: Apply concepts related to the scientific process and method to include safety procedures for classroom and laboratory; use and care of scientific equipment; interrelationships between science, technology and society; and effective communication of scientific results in oral, written, and graphic form.

S8.01 Apply the components of scientific processes and methods in classroom and laboratory investigations.
S8.02 Observe and practice safe procedures in the classroom and laboratory.
S8.03 Demonstrate proper use and care for scientific equipment.
S8.04 Investigate science careers, and advances in technology.
S8.05 Communicate results of scientific investigations in oral, written, and graphic form.

APPENDIX B:

WORKPLACE SKILLS

APPENDIX B
WORKPLACE SKILLS FOR THE 21ST CENTURY

WP1 Allocates resources (time, money, materials and facilities, and human resources).

WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.

WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.

WP4 Applies systems concept including basic understanding, monitoring and correction system performance, and designing and improving systems.

WP5 Selects, applies, and maintains/troubleshoots technology.

WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.

APPENDIX C:

STUDENT COMPETENCY PROFILE

STUDENT COMPETENCY PROFILE

Student: _____

This record is intended to serve as a method of noting student achievement of the competencies in each course. It can be duplicated for each student and serve as a cumulative record of competencies achieved in the program.

In the blank before each competency, place the date on which the student mastered the competency.

Ophthalmic Optics (OPT 1113)

_____ 1. Discuss principles of light.
_____ 2. Explain conditions of the human eye.
_____ 3. Interpret the ophthalmic prescription.
_____ 4. Discuss the lens clock.
_____ 5. Differentiate the types of multifocal lenses.
_____ 6. Demonstrate how to determine the addition power of multifocal lenses.
_____ 7. Discuss factors affecting lenses.

Optics Laboratory Techniques I (OPT 1214)

_____ 1. Produce selected lenses.

Laboratory Management and Inventory Control I (OPT 1313)

_____ 1. Discuss laboratory management.
_____ 2. Explain laboratory safety as related to ophthalmic technology.
_____ 3. Describe and use inventory and laboratory management software.
_____ 4. Perform basic safety procedures.

Ophthalmic Optics II (OPT 1123)

_____ 1. Discuss the lensometer.
_____ 2. Explain how positive and negative cylinders affect an ophthalmic lens.
_____ 3. Explain optical principles related to decentration.
_____ 4. Determine the effects of the lens as it is positioned before the eye.

Optics Laboratory Techniques II (OPT 1224)

_____ 1. Develop finish laboratory skills.

Laboratory Management and Inventory Control II (OPT 1323)

_____ 1. Apply small business management concepts to an optical business.

Ophthalmic Dispensing I (OPT 1413)

_____ 1. Name the basic frame parts used in eyewear.
_____ 2. Develop skills in frame selection.
_____ 3. Explain lens positioning in the frame.
_____ 4. Explain the techniques of inserting the lens in the frame to achieve a neat professional appearance.
_____ 5. Summarize the art of fitting the frame to a client.
_____ 6. Explain the lens design and proper fitting techniques of a progressive lens.

Ophthalmic Dispensing II (OPT 2423)

_____ 1. List lens and frame types that satisfy the prescription requirements.
_____ 2. Discuss lens tints as related to the client's needs and Rx requirements.
_____ 3. Summarize client information.
_____ 4. Explain business communication skills.

Optical Theory and Instrumentation (OPT 2513)

_____ 1. Describe the action of a light ray as it passes through an optical surface.
_____ 2. Discuss lens design.
_____ 3. Discuss prisms.
_____ 4. Describe the effects of near addition.
_____ 5. Examine vertical prismatic imbalance.

Dispensing Clinic I (OPT 2613)

_____ 1. Demonstrate small business procedures.
_____ 2. Demonstrate ophthalmic procedures.

Ophthalmic Dispensing III (OPT 2433)

_____ 1. Compare the optical difference between special and regular lenses.
_____ 2. Discuss the special needs client.
_____ 3. Discuss selling techniques.
_____ 4. Discuss the relationship between the wholesale supplier and the retailer.
_____ 5. Discuss the role of the employee.

Dispensing Clinic II (OPT 2623)

_____ 1. Determine the best eyewear for the client based on occupation, sports, hobbies, etc.

_____ 2. Explain multifocal lens fitting techniques.

Externship (OPT 2916)

_____ 1. Demonstrate mastery of selected skills in a clinical setting.